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Abstract

Magnetoelectric device

A magnetoelectric device responsive to an applied magnetic field, e.g. for use as a
5 reading head for data stored in magnetic storage media, comprises first and second
ferromagnetic regions (3, 4) with a channel region (5) between them, the
ferromagnetic regions being configured so that charge carriers with a particular spin
polarisation which can pass through the first region, pass through the second region
as a function of the relative orientations of magnetisation of the ferromagnetic
10 regions produced by the applied magnetic field such that the device exhibits a
conductivity as a function of the strength of the applied field. The channel region
(5) includes a nanotube (6) which may be formed of carbon, configured to provide a
quasi-one-dimensional channel to cause charge carriers which pass through the first
ferromagnetic region to maintain their spin polarisation as they pass towards the
15 second ferromagnetic region. In an alternative embodiment a deposited carbon layer
(14) is used in the channel region.